

CLAIMS

1. A method of manufacturing boards, which method uses a prepreg to be laminated in laminating, the laminating comprising:

5 heating and pressing the prepreg at a given place via a mold-releasing sheet by a heat and press means;

 removing the heat and the press applied by the heat and press means; and

 cooling the prepreg, then peeling off the mold-releasing sheet.
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2. A method of manufacturing boards comprising:

 laminating a prepreg on a metal foil;

 heating and pressing the prepreg at a given place for bonding the prepreg and the metal foil together;

15 laminating a board having a circuit pattern on the prepreg;

 heating and pressing the board at a given place for bonding the prepreg and the board together;

 laminating another prepreg on the board;

 heating and pressing the another prepreg for bonding the another
20 prepreg and the board together;

 laminating another metal foil on the another prepreg;

 heating and pressing the another metal foil at a given place for bonding the another metal foil and the another prepreg together; and

 heating and pressing an entire face of a unit laminated
25 hereinbefore,

 wherein a method of heating and pressing the prepreg at the given place includes:

heating and pressing the prepreg at the given place via a mold-releasing sheet by a heat and press means;

removing the heat and press applied by the heat and press means; and

5 cooling the prepreg, then peeling off the mold-releasing sheet.

3. The manufacturing method as defined in claim 1, wherein the laminating, in which the prepreg is used to be laminated, laminates a metal foil on the prepreg, laminates a board on the prepreg, or laminates a prepreg on the
10 prepreg.

4. The manufacturing method as defined in claim 1, wherein the board having a circuit pattern is a composite of thermosetting resin and one of woven fiber or non-woven fiber.

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5. The manufacturing method as defined in claim 1 or claim 2, wherein the prepreg has base material impregnated with resin, and the resin is kept in stage-B status.

20 6. The manufacturing method as defined in claim 5, wherein the heat and press means is set at a temperature not lower than a softening point of the resin impregnated into the prepreg and allowing the resin to be kept in stage-B status.

25 7. The manufacturing method as defined in claim 1 or claim 2, wherein the peeling off of the mold-releasing sheet peels off the sheet from one side of the sheet gradually and sequentially toward another side.

8. A mold-releasing sheet disposed between the prepreg and the heat and press means when the prepreg is heated and pressed by the heat and press means at least in the laminating, in which the prepreg is used to be laminated,
5 wherein the mold-releasing sheet has both heat resistance and release properties.

9. The mold-releasing sheet of claim 8, wherein the sheet is formed of fluoro-resin.
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10. The mold-releasing sheet of claim 8, wherein the sheet is formed of polyphenylene-sulfide undergone a release process.

11. The mold-releasing sheet of claim 8, wherein the sheet is formed of
15 polyethylene-resin undergone a release process.

12. The mold-releasing sheet of claim 10 or claim 11, wherein the release process is silicon-coating process.

20 13. The mold-releasing sheet of claim 10 or claim 11, wherein the release process is to coat thermosetting resin onto the mold-releasing sheet.

14. A manufacturing apparatus for boards comprising:
a stage for positioning and laminating a board material
25 thereon;
a pressuring hole provided to the stage;
a heat and press means movable up and down and disposed

above and under a place of the pressuring hole; and

a supplying and discharging means of a mold-releasing sheet,
wherein the mold-releasing sheet is supplied and discharged
passing the place of the pressuring hole and between the heat and press means
5 disposed above and under the pressuring hole.

15. The manufacturing apparatus of claim 14, wherein the pressuring
holes are provided on the stage at any places.

10 16. The manufacturing apparatus of claim 14, wherein the supplying
and discharging means includes a supply reel disposed at a first end of the
stage for supplying the mold-releasing sheet wound on the reel as a roll and a
take-up reel disposed at a second end of the stage for taking up the sheet.

15 17. The manufacturing apparatus of claim 16, wherein the apparatus
has a function of adjusting tension applied to the mold-releasing sheet supplied
by the supply reel and taken up by the take-up reel.

20 18. The manufacturing apparatus of claim 16 further comprising a
plurality of guide rollers disposed between the supply reel and the take-up reel
for guiding the mold-releasing sheet.

19. The manufacturing apparatus of claim 16, wherein the supplying
and discharging means is movable up and down.

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20. The manufacturing apparatus of claim 14, wherein the pressuring
hole has a diameter greater than a diameter of the heat and press means, and

the heat and press means is movable horizontally.

21. The manufacturing apparatus of claim 14, wherein the heat and press means is formed of a heater-punch.

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22. The manufacturing apparatus of claim 14, wherein the heat and press means is formed of one of a pulse heater and a supersonic wave generator.

23. A method of manufacturing boards by using the manufacturing
10 apparatus as defined in claim 14, the method comprising:

positioning and laminating a board material on a stage;

placing a mold-releasing sheet, supplied from a supplying and discharging means of the mold-releasing sheet, on the board material;

15 heating and pressing the board material via the mold-releasing sheet by a heat and press means;

removing the heat and the press applied to the board material from the heat and press means;

cooling the board material;

peeling the mold-releasing sheet off the board material; and

20 discharging the mold-releasing sheet.

24. The method of manufacturing as defined in claim 23, wherein the placing of the mold-releasing sheet on the board material adjusts tension at a given level, which tension is applied to the sheet disposed between a supply reel
25 and a take-up reel forming a supplying and discharging means, and the placing is done by lowering the supplying and discharging means.

25. The method of manufacturing as defined in claim 23, wherein the heating and pressing of the board material via the mold-releasing sheet is done by lowering the heat and press means and the supplying and discharging means simultaneously.

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26. The method of manufacturing as defined in claim 23, wherein the removing of the heat and the press applied to the board material by the heat and press means is done by lifting simultaneously the heat and press means lowered and the supplying and discharging means lowered.

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27. The method of manufacturing as defined in claim 23, wherein the peeling of the mold-releasing sheet off the board material is done by working only a take-up reel, which is an element of the supplying and discharging means lifted.

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28. The method of manufacturing as defined in claim 23, wherein the discharging of the mold-releasing sheet is done simultaneously by peeling the sheet off the board material.